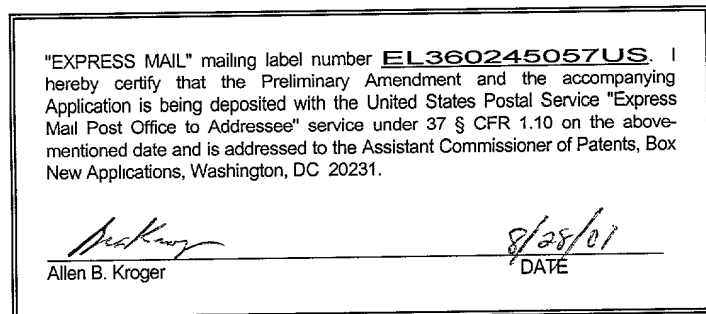


**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Komoro, et al. Docket: TIJ-30154  
Serial No.: TBD Examiner: TBD  
Filed: Herewith Art Unit: TBD  
For: MICROMINIATURE IMAGE PICKUP DEVICE

**PRELIMINARY AMENDMENT**

Assistant Commissioner For Patents  
Washington, D. C. 20231



Sir:

Before examination of the above-identified patent application, please make the following amendments:

**IN THE CLAIMS:**

Please amend claims 1-5 as follows:

1. (Amended) Microminiature image pickup device comprising:  
image pickup element, optical glass furnished on the front surface of said image pickup element, a stacked circuit board that is furnished on the rear surface of said image pickup element and that has a wiring pattern, and a connection member that electrically connects said image pickup element and the wiring pattern of said stacked circuit board;

said stacked circuit board being formed with insulated circuit boards, in which are packaged electronic circuits that include wiring patterns, stacked in multiple layers in the diametral direction perpendicular to the length direction of the microminiature image pickup device and having a cavity formed as an indentation in the diametral direction thereof;

a first electronic component mounted in said cavity, and a second electronic component mounted on the surface of said stacked circuit board.

2. (Amended) Microminiature image pickup device described in Claim 1

wherein said first electronic component is connected to a wiring pattern formed on the bottom surface of said cavity.

3. (Amended) Microminiature image pickup device described in Claim 1 wherein said first electronic component is mounted in said cavity in a bare chip state.

4. (Amended) Microminiature image pickup device described in Claim 1 wherein said image pickup device is a CCD device.

5. (Amended) Microminiature image pickup device described in Claim 1 wherein said connection member is TAB tape.

Please add new claims 6-11 as follows:

-- 6. (New) Microminiature image pickup device described in Claim 2 wherein said first electronic component is mounted in said cavity in a bare chip state.

7. (New) Microminiature image pickup device described in Claim 2 wherein said image pickup device is a CCD device.

8. (New) Microminiature image pickup device described in Claim 3 wherein said image pickup device is a CCD device.

9. (New) Microminiature image pickup device described in Claim 2 wherein said connection member is TAB tape.

10. (New) Microminiature image pickup device described in Claim 3 wherein said connection member is TAB tape.

11. (New) Microminiature image pickup device described in Claim 4 wherein said connection member is TAB tape. --

## MARKED-UP VERSION TO SHOW CHANGES

### IN THE CLAIMS:

Please amend claims 1-5 as follows:

1. (Amended) Microminiature image pickup device comprising:

[that is a microminiature image pickup device that has an] image pickup element, optical glass furnished on the front surface of said image pickup element, a stacked circuit board that is furnished on the rear surface of said image pickup element and that has a wiring pattern, and a connection member that electrically connects said image pickup element and the wiring pattern of said stacked circuit board;

said stacked circuit board [is] being formed with insulated circuit boards, in which are packaged electronic circuits that include wiring patterns, stacked in multiple layers in the diametral direction perpendicular to the length direction of the microminiature image pickup device and [it has] having a cavity formed as an indentation in the diametral direction thereof;

a first electronic component [is] mounted in said cavity, and a second electronic component [is] mounted on the surface of said stacked circuit board.

2. (Amended) Microminiature image pickup device described in Claim 1

[where] wherein said first electronic [instrument] component is connected to a wiring pattern formed on the bottom surface of said cavity.

3. (Amended) Microminiature image pickup device described in Claim 1 [or 2 where] wherein said first electronic component is mounted in said cavity in a bare chip state.

4. (Amended) Microminiature image pickup device described in Claim 1[, 2, or 3 where] wherein said image pickup device is a CCD device.

5. (Amended) Microminiature image pickup device described in Claim 1[, 2, 3, or 4 where] wherein said connection member is TAB tape.

## MARKED-UP VERSION TO SHOW CHANGES

### ABSTRACT

[To provide a] A microminiature CCD image pickup device with a shortened length that can be applied to an electronic medical endoscope or the like. Microminiature CCD image pickup device (1) has optical glass (11), CCD chip (12), and stacked circuit board (15) that are disposed in that order along its length orientation. It further has TAB tape (13) that connects CCD chip (12) and the electronic circuits mounted on stacked circuit board (15). Stacked circuit board (15) is formed with insulated circuit board in which are packaged electronic circuits, including their wiring pattern, stacked in stacked layers in the diametral direction perpendicular to said length orientation, and has at least one cavity (153) formed as an indentation in the diametral direction. At least one miniature chip component (16) is mounted in cavity (153), and at least one chip component (17) is mounted on the surface of stacked circuit board (15) over cavity (153). The electronic circuits are stacked in stacked circuit board (15) and chip components (16) and (17) are disposed in the diametral direction, so that the length of microminiature CCD image pickup device (1) [was] is shortened.

## ABSTRACT

A microminiature CCD image pickup device with a shortened length that can be applied to an electronic medical endoscope or the like. Microminiature CCD image pickup device (1) has optical glass (11), CCD chip (12), and stacked circuit board (15) that are disposed in that order along its length orientation. It further has TAB tape (13) that connects CCD chip (12) and the electronic circuits mounted on stacked circuit board (15). Stacked circuit board (15) is formed with insulated circuit board in which are packaged electronic circuits, including their wiring pattern, stacked in stacked layers in the diametral direction perpendicular to said length orientation, and has at least one cavity (153) formed as an indentation in the diametral direction. At least one miniature chip component (16) is mounted in cavity (153), and at least one chip component (17) is mounted on the surface of stacked circuit board (15) over cavity (153). The electronic circuits are stacked in stacked circuit board (15) and chip components (16) and (17) are disposed in the diametral direction, so that the length of microminiature CCD image pickup device (1) is shortened.

## REMARKS

Entry and favorable action of the claims are earnestly solicited in light of the above amendments.

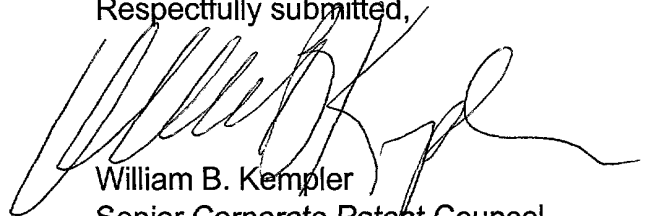
Applicants have amended the claims inter alia to avoid multiple dependent claims and to place the claims in the appropriate form.

Early action on the merits is respectfully requested.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current preliminary amendment. The attached page is captioned **"Version with markings to show changes made."**

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



William B. Kempler  
Senior Corporate Patent Counsel  
Reg. No.: 28,228

Texas Instruments Incorporated  
P. O. Box 655474, MS 3999  
Dallas, Texas 75265  
(972) 917-5452